REMARKS

Currently, claims 16-30 are pending in the application. No claim has been amended. In the Office Action, the Examiner rejects all pending claims for the same reasons set forth in the Office Action dated October 1, 2002. Specifically, claims 16-30 are rejected under the doctrine of obviousness-type double patenting over claims 1-8 of U.S. Patent No. 6,419,789. Claims 16-30 were also rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,318,669 to *Dasgupta* in view of U.S. Patent No. 5,397,435 to *Ostendorf et al.* or U.S. Patent No. 5,437,766 to *Van Phan et al.* Applicants respectfully traverse these rejections.

I. Obviousness-Type Double Patenting Rejection

All claims were rejected under the doctrine of obviousness-type double patenting over claims 1-8 of U.S. Patent No. 6,419,789. Applicants respectfully request that this rejection be held in abeyance until allowable subject matter is indicated.

II. The Claims Are Not Obvious Over the Cited Prior Art

The Examiner rejected all claims under 35 U.S.C. § 103(a) as obvious over *Dasgupta* in view of *Ostendorf et al.* or *Van Phan et al.* The Examiner claims that *Dasgupta* discloses tissue and paper towels which contain the claimed cationic wet strength agent and anionic dry strength agent in a ratio of 1/20 to 10/1 at a concentration of 0.1 to 2% by weight. The claimed strength, stiffness, and stretch characteristics are said to be "obvious optimizations" in view of the teachings of *Ostendorf et al.* or *Van Phan et al.* The Examiner also states that "[w]hether or not the cationic wet strength agent and anionic dry strength agent to the pulp during the

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process of making the paper is moot because the amount of these agents in the final paper product is the same.[1]"

In the April 1, 2003, Request for Reconsideration, Applicants argued that the Examiner has failed to establish a *prima facie* case of obviousness, as required by law. Specifically, Applicants questioned the Examiner's conclusion that the cited references disclose final products with the same strength, softness and absorbency characteristics displayed by the present invention, arguing that the Examiner has not set forth any teaching from the prior art which shows the claimed ranges for machine direction stretch, cross-direction wet strength, or tensile modulus of stiffness which are achieved by the present invention. Moreover, Applicants argued that the Examiner's assertion that such characteristics may be achieved by mere optimization of the amount of wet strength agent, softening agents, or foreshortening of the web as disclosed in *Ostendorf et al.* or *Van Phan et al.* is incorrect because these references do not teach compositions which possess the characteristics of the claimed products, nor would it have been obvious to one of skill in the art to obtain these characteristics.

Additionally, Applicants respectfully submitted that obtaining products with the same superior strength, softness, and absorbency as the products of the present invention is not merely "obvious optimization" of the prior art processes. As noted in the

[1] Applicants respectfully submit that the meaning of this statement is unclear. Applicants presume the Examiner meant to state that "whether or not the **amount** of cationic wet strength agent and anionic dry strength agent **which is added** to the pulp during the process of making the paper **is controlled** is moot because the amount of these agents in the final paper product is the same," and will respond accordingly. If Applicants have mis-understood the Examiner's intentions, a clearer statement of the grounds for rejection is respectfully requested in the next Office Action.

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specification, the production of "away-from-home" paper towels is typically constrained by cost concerns. The prior art products cited in the specification, as well as those cited by the Examiner, have addressed these cost concerns by producing products with low strength, softness, or absorbency. However, through the use of the present invention, Applicants have been able to maintain a low-cost product while improving strength, softness, and absorbency. Applicants respectfully directed the Examiner's attention to the Examples of the present specification, and specifically Figures 1-9 which show the claimed products' superior characteristics over those of the prior art.

Applicants also disputed that the prior art discloses products containing the same amount of cationic and anionic strength agents as that claimed. Specifically, all pending claims recite that the cationic wet strength agent is present in an amount of from 15 to 30 lbs/ton, and further that the ratio of cationic and anionic strength agents is controlled to achieve a net charge within a certain range. None of the cited references disclose an amount of cationic wet strength agent within the claimed range, nor do any of the references disclose that the ratio of the cationic to anionic strength agent is controlled to achieve close to a net charge balance. For example, *Dasgupta* teaches broadly that the ratio of anionic to cationic additives may range from 1/20 to 10/1, but the reference nowhere suggests a selection of the ratio based upon the net charge of the papermaking furnish. Nor is the fact that, in the present invention, the ratio of anionic to cationic strength agents is controlled to achieve a net charge within a specific range "moot." By controlling the ratio of cationic wet strength agent and anionic strength agent such that the net charge is zero or slightly anionic, the resulting web has excellent softness, absorbency, and strength. The Examiner has not set forth any teaching from

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the prior art which shows the claimed ranges for machine direction stretch, cross-direction wet strength, or tensile modulus of stiffness which are achieved by the present invention.

Applicants further argued that the cited references simply do not disclose a web with the superior characteristics achieved by the present invention, in which the amount of cationic wet strength agent and anionic strength agent is controlled so that the net charge of the web when formed from an aqueous stream is maintained in the range of from less than about zero to about -115 meq x 10^{-6} per 10 ml. The Examiner therefore has failed to show that the cited prior art references, alone or in combination, teach or suggest each and every element of the claimed invention, as required by the *prima facie* case of obviousness.

In response to Applicants' argument, the Examiner invited evidence of unexpected results of the paper towel of the present invention. The Declaration of Gary L. Worry, submitted herewith, establishes the unexpected results of a paper towel of the present invention. The present invention provides a method of making a paper towel product and a single-ply paper towel product that achieves high strength and softness. The towel of the present invention achieves levels of strength and softness above the levels known for single-ply paper towels. The properties of the paper towel according to the present invention meet or exceed the levels associated with other paper towel products, while having a lower basis weight.

Specifically, when the strength of a paper towel is increased without a corresponding increase in the basis weight of the paper towel, it is expected that the softness of the paper towel will decrease. Additionally, when a paper towel is creped to

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increase the softness of the paper, it is expected that the strength will be reduced. As set forth in the Declaration of Gary L. Worry, and as shown in Declaration Figures 1 - 4, a creped paper towel of the present invention maintains high strength and softness, while having a lower basis weight than other single-ply paper towels.

The Examiner's attention is directed to Figures 1 - 4 of the Declaration of Gary L. Worry. Figure 1 is a plot of the relationship between the scalar rating of the subjective feel of a towel in a monadic test versus the geometric mean wet tensile strength. A towel product according to the present invention is labeled F4-B and prior art towel products are labeled as KC Surpass® 50000, Scott 180, Scott Select® 189, and JR-065. While the towel product according to the present invention has a lower basis weight than each of the other samples, the paper towel exceeds or substantially achieves both the geometric mean wet tensile strength and the softness of the other paper towels. Of note, the only paper towel exhibiting comparable geometric mean wet tensile strength, the KC Surpass® 50000 paper towel, rated approximately 1 unit lower than the paper towel of the present invention in softness, where a difference of 0.3 units is considered significant.

Figure 2 is a plot of the relationship between the rating of the subjective sensory softness test versus the geometric mean wet tensile strength. Towel products according to the present invention are labeled F4-B, MH7, and MH8 and prior art towels are labeled KC Surpass® 50000, Scott Select® 189, and JR-065. As shown, each of the towel products made according to the present invention has a higher softness rating than the prior art paper towels, while exceeding or substantially achieving the geometric mean wet tensile strength of the prior art towels. Specifically, each of the prior art

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towels had a scaled sensory softness of "0", meaning that each of the towels had generally the same softness. The paper towels of the present invention, on the other hand, had sensory softness of between about 0.6 and 1.2. A 0.4 softness difference is considered a significant improvement.

Figure 3 is a plot of the relationship between the scalar rating of the overall subjective perception of a towel (which is an indication of perceived softness and strength) in a monadic test versus the geometric mean wet tensile strength. A towel product according to the present invention is labeled F4-B and prior art towels are labeled KC Surpass® 50000, Scott 180, Scott Select® 189, and JR-065. The overall ratings of the paper towel of the present invention are higher than those of the prior art paper towels. Specifically, the monadic ratings of the paper towel of the present invention exceed all tested paper towels, except for the Scott 189 paper towel. However, the paper towel of the present invention has a geometric mean wet tensile strength of approximately 1250 g/3", while the Scott 189 towel has a geometric mean wet tensile strength of less than 1000 g/3". Additionally, the paper towel of the present invention has a basis weight that is lower than that of the Scott 189 towel by more than 6.5 lbs. per 3000 sq. foot ream, which represents a significant costs savings.

Finally, Figure 4 is a plot of the tensile modulus of stiffness (lower stiffness indicating higher softness) versus the geometric mean wet tensile strength. Towel products according to the present invention are labeled F4-B, MH7, and MH8, and prior art towels are labeled KC Surpass® 50000, Scott 180, Scott Select® 189, and JR-065. A paper towel of the present invention exceeds or substantially achieves the softness of the prior art paper towels, while exceeding or substantially achieving the geometric

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mean wet tensile strength of the prior art towels. In addition, these superior results are achieved with paper towels having a lower basis weight. Importantly, this objective data regarding the softness of the paper towels agrees with the subjective monadic data set forth in Figures 1 and 2.

Thus, while it is generally expected that increasing the strength of a paper towel product will reduce the softness of the paper towel, it is clear from Figures 1 - 4 that the paper towel of the present invention achieves equivalent or superior softness and geometric mean wet tensile strength, while having a lower basis weight than prior art paper towels.

Regarding *Dasgupta*, *Ostendorf et al.* and *Van Phan et al.*, none of the examples in these patents show the claimed ranges for machine direction stretch, cross-direction wet strength, or tensile modulus of stiffness which are achieved by the present invention, and recited in the pending claims. In addition, these references do not teach compositions which possess the characteristics of the claimed products, nor would it have been obvious to one of skill in the art to obtain these characteristics by merely optimizing the amount of wet strength agent, softening agents, or foreshortening of the web as disclosed in the prior art.

In addition, *Dasgupta* teached away from the claimed invention. Specifically, regarded comparative example 12 of *Dasgupta*, the specification states that an undesirable "sharp drop in dry strength accompanied by an increase in bending stiffness was noted whe[n] the carboxymethyl cellulose was used." Accordingly, it is clear that *Dasgupta* was not aware of the importance of controlling "the amount of said cationic wet strength agent and said anionic wet strength agent . . . so that the net

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charge of the web when formed from an aqueous stream is maintained in the range of from less than about zero to about -115 meq x 10^{-6} per 10 ml," as recited in claim 16, or controlling "the amount of cationic wet strength agent and anionic wet strength agent so that the net charge of said aqueous stream in the headbox is maintained in the range of from less than about zero to about -115 meq x 10^{-6} per 10 ml," as recited in claim 24. Accordingly, claims 16 and 24, as well as claims 17 - 23 and 25 - 30 that depend therefrom, respectively, are allowable.

In view of the foregoing remarks, Applicants respectfully request the reconsideration and further examination of this application and the timely allowance of the pending claims. Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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